**CLAIMS**

1. A method of treating patients who have diseases characterized bone loss comprising the step of administering to said patient an amount of a TRANCE/RANK inhibitor effective to inhibit osteoclastogenesis and/or osteoclast function.

2. The method of claim 1 wherein said TRANCE/RANK inhibitor is a compound having the Formula I wherein:

$R_1$ and $R_2$ are, independently, selected from the group consisting of -H, -$OCH_3$, -$CH_2CH_3$, -*t*-butyl, 3-carboxy-4-chlorophenylamino, -N-$(CH_2CH_2OH)_2$, and -O(O)C-Ph;

$R_3$ is selected from the group consisting of -H, ethyl, -$OCH_3$, -Cl, Br, F, 3-carboxy-4-chlorophenylamino, -N-$(CH_2CH_2OH)_2$, -*t*-butyl, and -OC(O)-Ph, and is not limited to attachment at any certain position on the phenyl ring to which it is attached; and

$R_4$ is selected from the group consisting of -Br,-Cl, and -F.

3. The method of claim 2 wherein $R_3$ is attached at either the 1 or 4 position of the phenyl ring.

4. The method of claim 1 wherein

$R_1$ , $R_2$, and $R_3$ are -$OCH_3$, $R_3$ is attached at the 4 position, $R_4$ is -Cl;

$R_1$ and $R_2$ are methyl, $R_3$ is ethyl, attached at the 4 position, $R_4$ is -Cl

$R_1$ and $R_2$ are -$OCH_3$, $R_3$ is -Cl, attached at the 2 position, $R_4$ is -Cl;

$R_1$ and $R_2$ are -$OCH_3$ and $R_3$ is H, $R_4$ is -Cl;

$R_1$ is H, $R_2$ and $R_3$ are 3-carboxy-4-chlorophenylamino, and $R_3$ is attached at the 4 position, $R_4$ is -Cl;

$R_1$ and $R_2$ are -N$(CH_2CH_2OH)_2$, $R_3$ is Cl, attached at the 4 position, $R_4$ is -Cl;

$R_1$, $R_2$, and $R_3$ are *t*-butyl, $R_3$ is attached at the 4 position, $R_4$ is -Cl;

$R_1$ is -$OCH_3$, $R_2$ and $R_3$ are H, $R_4$ is Cl; or

$R_1$, $R_2$, and $R_3$ are benzoate, $R_3$ is attached at the 4 position, $R_4$ is -Br.

5. The method of claim 1 wherein said TRANCE/RANK inhibitor is selected from the group consisting I-A, I-B, I-C, I-D, I-E, I-F, I-G, I-H and I-I.

6. The method of claim 1 wherein said TRANCE/RANK inhibitor is a compound having the Formula II wherein:

$R_1$ is selected from the group consisting of -diphenylchloro methyl, -di(4-chlorophenyl)chloro methyl, and 4-(diphenylchloromethyl)phenyl; and

$R_2$, $R_3$, $R_4$ are independently selected from the group consisting of -Br, -Cl, and -F.

7. The method of claim 6 wherein $R_2$, $R_3$, $R_4$ are each -Cl.

8. The method of claim 1 wherein the TRANCE/RANK inhibitor is selected from the group consisting compounds II-A, II-B, II-C and II-D.

9. The method of claim 1 wherein said inhibitor is a compound having Formula III wherein:

$R_1$ = $(NO_2)$, $O(CO)CH_3$, OH, $O(CO)CH_3$, $O(CO)(CH_2)_2COOH$, $O(CO)CH_2Br$, $O(CO)CH_2Cl$, $O(CO)CH_2N(CH_3)_3$, or $OC_5H_9O$;

$R_2$ = $CH_2O(NO_2)$, CHO, $CH_2O(NO_2)$, CN, $CH_3$, COOH, CHNOH, $CH_2O(CO)(CH_2)_2COOH$, $CHN(NH)CONH_2$, $CHN(NH)C_6H_5$, $CHN(CH_2)C_6H_5$, $CH_2N(CH_2)_2OH$, $CH_2NC_6H_5$, or $CH_2N(NH)CSNH_2$;

$R_3$ = OH, or H;

$R_4$ = $CH_3$;

$R_5$ = OH;

$R_6$ = $C_4H_3O_2$, $N(NHCO)C_6H_4Cl$, $N(NHCO)C_6H_4F$, COOH, O, $COCH_3$, $CH(CH_3)(CH_2)_2COOH$, $CH(CH_3)(CH_2)_2COOCH_3$, $O(CO)C_6H_5$, or OH;

$R_7$ = $O(CO)CH_2N(CH_3)_3$, or $O(CO)CH_3$;

$R_8$ = OH;

$R_9$ = O, or OH; and

$R_{10}$ = O.

10. The method of claim 1 wherein the inhibitor is selected from the group consisting compounds III-1 to III-31.

11. The method of claim 1 wherein said inhibitor is a compound having Formula IV wherein:

$R_1 = O(CO)(CH_2)_2COOH$, or $O(CO)CH_2Br$; and

$R_2 = O(CO)(CH_2)_2COOH$, or $O(CO)CH_2Br$.

12. The method of claim 1 wherein the inhibitor is selected from the group consisting compounds IV-1 and IV-2.

13. The method of claim 1 wherein said inhibitor is a compound having Formula V wherein:

$R_1 = O$, OH, or $O(CO)CH_3$ ;

$R_2 = O(CO)CH_3$, OH, $CO(CH_3)$, or $CO(CH_2)O(CO)CH_3$;

$R_3 = CH_3$, or OH; and

$R_4 = O(CO)CH_2C_6H_4I$, or $CH_3$.

14. The method of claim 1 wherein the inhibitor is selected from the group consisting compounds V-1 and V-5

15. The method of claim 1 wherein said inhibitor is a compound having Formula VI wherein:

$R_1 = O(CO)CH_3$, OH, or $O(CO)(CH_2)_2COOH$;

$R_2 = CH_3$;

$R_3 = O$, or OH;

$R_4 = CH_3$;

$R_5 = C_9H_{13}COCH_3$, $C_9H_{13}(CH_2CH_3)(CH_2OH)$, $C_9H_{13}(CH_2CH_3)(CH_2OCOCH_3)$, $C_9H_{13}(CH_2CH_3)(CH_2OCO(CH_2)_2COOH)$, $C_9H_{13}(CH_2CH_3)(COOH)$, or $C_8H_7O(CH_3)(C_4H_9OCH_3)$;

$R_6 = CH_3$;

$R_7$ = O, or H;

$R_8$ = $CH_3$;

$R_9$ = $(CH_3)_2$;and

$R_{10}$ = Br.

16. The method of claim 1 wherein the inhibitor is selected from the group consisting compounds VI-1 and VI-11.

17. The method of claim 1 wherein the inhibitor is selected from the group consisting compounds VII, VIII IX, X, XI and XII.

18. The method of claim 1 wherein the inhibitor is a peptide having the formula:

$R_1 - R_2 - R_3 - R_4 - R_5$

wherein:

$R_1$ is 1-5 amino acid residues;

$R_2$ is a linking amino acid residue;

$R_3$ is selected from the group consisting of: DRGWA (SEQ ID NO:1); DGDLAT (SEQ ID NO:2); SDFATE (SEQ ID NO:3); VTKTSIKIPSSH (SEQ ID NO:4); TKTSIKIPSSH (SEQ ID NO:5); KTSIKIPSSH (SEQ ID NO:6); YWSNSEF (SEQ ID NO:7); YWNSE (SEQ ID NO:8); PDQDAP (SEQ ID NO:9); PDSWH (SEQ ID NO:10); SKEL (SEQ ID NO:11); EIEF (SEQ ID NO:12); SRSGHS (SEQ ID NO:13); RFQEEIKENTKNDKQ (SEQ ID NO:14); TSYPD (SEQ ID NO:15); KENTK (SEQ ID NO:16); and conservatively substituted derivatives thereof;

$R_4$ is a linking amino acid residue;

$R_5$ is 1-5 amino acid residues; and

wherein $R_2$ and $R_4$ are bound to each other, thereby forming a cyclic portion which includes $R_2$, $R_3$ and $R_4$ with $R_1$ and $R_5$ forming exocyclic portions, and one or both of $R_1$ and $R_5$ comprising at least one tyrosine or phenylalanine.

19. The method of claim 1 wherein the inhibitor is selected form the group consisting of SEQ ID NOs:20-34.

20. The method of claim 19 wherein the inhibitor is selected from the group consisting of: SEQ ID NOs:20-30 with amidated C termini

[H]-YC DRGWA CY-[NH2]

[H]-YC DGDLAT CY-[NH2]

[H]-YC SDFATE CY-[NH2]

[H]-YC VTKTSIKIPSSH CY-[NH2]

[H]-YC KTSIKIPSSH CY-[NH2]

[H]-YC YWSNSEF CY-[NH2]

[H]-C YWNSE CY-[NH2]

[H]-YC PDQDAP CY-[NH2]

[H]-YC PDSWH CYDE-[NH2]

[H]-YC SKEL CYVKQE-[NH2]

[H]-YC EIEF CYKHR-[NH2]

and SEQ ID NO:S 31-34

TR-LSS YC SRSGHS CY

TR-LRQ YC RFQEEIKENTKNDKQ CY

TR-LTI YC TSYPD CI

TR-LED RYQEEC KENTK CDKQ.

21. A method of modulating dendritic cell maturation, T cell proliferation, and/or CD40 receptor systems in an individual comprising the step of administering to said individual an amount of a TRANCE/RANK inhibitor effective to modulating dendritic cell maturation, T cell proliferation, and/or CD40 receptor systems.

22. The method of claim 21 wherein said TRANCE/RANK inhibitor is a compound having the Formula I wherein:

$R_1$ and $R_2$ are, independently, selected from the group consisting of -H, -$OCH_3$, -$CH_2CH_3$, -*t*-butyl, 3-carboxy-4-chlorophenylamino, -N-$(CH_2CH_2OH)_2$, and -O(O)C-Ph;

$R_3$ is selected from the group consisting of -H, ethyl, $-OCH_3$, -Cl, Br, F, 3-carboxy-4-chlorophenylamino, $-N-(CH_2CH_2OH)_2$, -*t*-butyl, and -OC(O)-Ph, and is not limited to attachment at any certain position on the phenyl ring to which it is attached; and

$R_4$ is selected from the group consisting of -Br,-Cl, and -F.

23. The method of claim 21 wherein $R_3$ is attached at either the 1 or 4 position of the phenyl ring.

24. The method of claim 21 wherein

$R_1$ , $R_2$, and $R_3$ are $-OCH_3$, $R_3$ is attached at the 4 position, $R_4$ is -Cl;

$R_1$ and $R_2$ are methyl, $R_3$ is ethyl, attached at the 4 position, $R_4$ is -Cl

$R_1$ and $R_2$ are $-OCH_3$, $R_3$ is -Cl, attached at the 2 position, $R_4$ is -Cl;

$R_1$ and $R_2$ are $-OCH_3$ and $R_3$ is H, $R_4$ is -Cl;

$R_1$ is H, $R_2$ and $R_3$ are 3-carboxy-4-chlorophenylamino, and $R_3$ is attached at the 4 position, $R_4$ is -Cl;

$R_1$ and $R_2$ are $-N(CH_2CH_2OH)_2$, $R_3$ is Cl, attached at the 4 position, $R_4$ is -Cl;

$R_1$, $R_2$, and $R_3$ are *t*-butyl, $R_3$ is attached at the 4 position, $R_4$ is -Cl;

$R_1$ is $-OCH_3$, $R_2$ and $R_3$ are H, $R_4$ is Cl; or

$R_1$, $R_2$, and $R_3$ are benzoate, $R_3$ is attached at the 4 position, $R_4$ is -Br.

25. The method of claim 21 wherein said TRANCE/RANK inhibitor is selected from the group consisting I-A, I-B, I-C, I-D, I-E, I-F, I-G, I-H and I-I.

26. The method of claim 21 wherein said TRANCE/RANK inhibitor is a compound having the Formula II wherein:

$R_1$ is selected from the group consisting of -diphenylchloro methyl, -di(4-chlorophenyl)chloro methyl, and 4-(diphenylchloromethyl)phenyl; and

$R_2$, $R_3$, $R_4$ are independently selected from the group consisting of -Br, -Cl, and -F.

27. The method of claim 26 wherein $R_2$, $R_3$, $R_4$ are each -Cl.

28. The method of claim 21 wherein the TRANCE/RANK inhibitor is selected from the group consisting compounds II-A, II-B, II-C and II-D.

29. The method of claim 21 wherein said inhibitor is a compound having Formula III wherein:

$R_1$ = $(NO_2)$, $O(CO)CH_3$, OH, $O(CO)CH_3$, $O(CO)(CH_2)_2COOH$, $O(CO)CH_2Br$, $O(CO)CH_2Cl$, $O(CO)CH_2N(CH_3)_3$, or $OC_5H_9O$;

$R_2$ = $CH_2O(NO_2)$, CHO, $CH_2O(NO_2)$, CN, $CH_3$, COOH, CHNOH, $CH_2O(CO)(CH_2)_2COOH$, $CHN(NH)CONH_2$, $CHN(NH)C_6H_5$, $CHN(CH_2)C_6H_5$, $CH_2N(CH_2)_2OH$, $CH_2NC_6H_5$, or $CH_2N(NH)CSNH_2$;

$R_3$ = OH, or H;

$R_4$ = $CH_3$;

$R_5$ = OH;

$R_6$ = $C_4H_3O_2$, $N(NHCO)C_6H_4Cl$, $N(NHCO)C_6H_4F$, COOH, O, $COCH_3$, $CH(CH_3)(CH_2)_2COOH$, $CH(CH_3)(CH_2)_2COOCH_3$, $O(CO)C_6H_5$, or OH;

$R_7$ = $O(CO)CH_2N(CH_3)_3$, or $O(CO)CH_3$;

$R_8$ = OH;

$R_9$ = O, or OH; and

$R_{10}$ = O.

30. The method of claim 21 wherein the inhibitor is selected from the group consisting compounds III-1 to III-31.

31. The method of claim 21 wherein said inhibitor is a compound having Formula IV wherein:

$R_1$ = $O(CO)(CH_2)_2COOH$, or $O(CO)CH_2Br$; and

$R_2$ = $O(CO)(CH_2)_2COOH$, or $O(CO)CH_2Br$.

32. The method of claim 21 wherein the inhibitor is selected from the group consisting compounds IV-1 and IV-2.

33. The method of claim 21 wherein said inhibitor is a compound having Formula V wherein:

$R_1$ = O, OH, or $O(CO)CH_3$ ;

$R_2$ = $O(CO)CH_3$, OH, $CO(CH_3)$, or $CO(CH_2)O(CO)CH_3$;

$R_3$ = $CH_3$, or OH; and

$R_4$ = $O(CO)CH_2C_6H_4I$, or $CH_3$.

34. The method of claim 21 wherein the inhibitor is selected from the group consisting compounds V-1 and V-5

35. The method of claim 21 wherein said inhibitor is a compound having Formula VI wherein:

$R_1$ = $O(CO)CH_3$, OH, or $O(CO)(CH_2)_2COOH$;

$R_2$ = $CH_3$;

$R_3$ = O, or OH;

$R_4$ = $CH_3$;

$R_5$ = $C_9H_{13}COCH_3$, $C_9H_{13}(CH_2CH_3)(CH_2OH)$, $C_9H_{13}(CH_2CH_3)(CH_2OCOCH_3)$, $C_9H_{13}(CH_2CH_3)(CH_2OCO(CH_2)_2COOH)$, $C_9H_{13}(CH_2CH_3)(COOH)$, or $C_8H_7O(CH_3)(C_4H_9OCH_3)$;

$R_6$ = $CH_3$;

$R_7$ = O, or H;

$R_8$ = $CH_3$;

$R_9$ = $(CH_3)_2$;and

$R_{10}$ = Br.

36. The method of claim 21 wherein the inhibitor is selected from the group consisting compounds VI-1 and VI-11.

37. The method of claim 21 wherein the inhibitor is selected from the group consisting compounds VII, VIII IX, X, XI and XII.

38. The method of claim 21 wherein the inhibitor is a peptide having the formula:

$R_1 - R_2 - R_3 - R_4 - R_5$

wherein:

$R_1$ is 1-5 amino acid residues;

$R_2$ is a linking amino acid residue;

$R_3$ is selected from the group consisting of: DRGWA (SEQ ID NO:1); DGDLAT (SEQ ID NO:2); SDFATE (SEQ ID NO:3); VTKTSIKIPSSH (SEQ ID NO:4); TKTSIKIPSSH (SEQ ID NO:5); KTSIKIPSSH (SEQ ID NO:6); YWSNSEF (SEQ ID NO:7); YWNSE (SEQ ID NO:8); PDQDAP (SEQ ID NO:9); PDSWH (SEQ ID NO:10); SKEL (SEQ ID NO:11); EIEF (SEQ ID NO:12); SRSGHS (SEQ ID NO:13); RFQEEIKENTKNDKQ (SEQ ID NO:14); TSYPD (SEQ ID NO:15); KENTK (SEQ ID NO:16); and conservatively substituted derivatives thereof;

$R_4$ is a linking amino acid residue;

$R_5$ is 1-5 amino acid residues; and

wherein $R_2$ and $R_4$ are bound to each other, thereby forming a cyclic portion which includes $R_2$, $R_3$ and $R_4$ with $R_1$ and $R_5$ forming exocyclic portions, and one or both of $R_1$ and $R_5$ comprising at least one tyrosine or phenylalanine.

39. The method of claim 21 wherein the inhibitor is selected form the group consisting of SEQ ID NOs:20-34.

40. The method of claim 39 wherein the inhibitor is selected from the group consisting of: SEQ ID NOs:20-30 with amidated C termini

[H]-YC DRGWA CY-[NH2]

[H]-YC DGDLAT CY-[NH2]

[H]-YC SDFATE CY-[NH2]

[H]-YC VTKTSIKIPSSH CY-[NH2]

[H]-YC KTSIKIPSSH CY-[NH2]

[H]-YC YWSNSEF CY-[NH2]

[H]-C YWNSE CY-[NH2]

[H]-YC PDQDAP CY-[NH2]

[H]-YC PDSWH CYDE-[NH2]

[H]-YC SKEL CYVKQE-[NH2]

[H]-YC EIEF CYKHR-[NH2]

and SEQ ID NO:S 31-34

TR-LSS YC SRSGHS CY

TR-LRQ YC RFQEEIKENTKNDKQ CY

TR-LTI YC TSYPD CI

TR-LED RYQEEC KENTK CDKQ.

41. A peptide having the formula:

$$R_1 - R_2 - R_3 - R_4 - R_5$$

wherein:

$R_1$ is 1-5 amino acid residues;

$R_2$ is a linking amino acid residue;

$R_3$ is selected from the group consisting of: DRGWA (SEQ ID NO:1); DGDLAT (SEQ ID NO:2); SDFATE (SEQ ID NO:3); VTKTSIKIPSSH (SEQ ID NO:4); TKTSIKIPSSH (SEQ ID NO:5); KTSIKIPSSH (SEQ ID NO:6); YWSNSEF (SEQ ID NO:7); YWNSE (SEQ ID NO:8); PDQDAP (SEQ ID NO:9); PDSWH (SEQ ID NO:10); SKEL (SEQ ID NO:11); EIEF (SEQ ID NO:12); SRSGHS (SEQ ID NO:13); RFQEEIKENTKNDKQ (SEQ ID NO:14); TSYPD (SEQ ID NO:15); KENTK (SEQ ID NO:16); and conservatively substituted derivatives thereof;

$R_4$ is a linking amino acid residue;

$R_5$ is 1-5 amino acid residues; and

wherein $R_2$ and $R_4$ are bound to each other, thereby forming a cyclic portion which includes $R_2$, $R_3$ and $R_4$ with $R_1$ and $R_5$ forming exocyclic portions, and one or both of $R_1$ and $R_5$ comprising at least one tyrosine or phenylalanine.

42. The peptide of claim 41 wherein selected form the group consisting of SEQ ID NOs:20-34.

43. The peptide of claim 42 selected from the group consisting of: SEQ ID NOs:20-30 with amidated C termini

[H]-YC DRGWA CY-[NH2]

[H]-YC DGDLAT CY-[NH2]

[H]-YC SDFATE CY-[NH2]

[H]-YC VTKTSIKIPSSH CY-[NH2]

[H]-YC KTSIKIPSSH CY-[NH2]

[H]-YC YWSNSEF CY-[NH2]

[H]-C YWNSE CY-[NH2]

[H]-YC PDQDAP CY-[NH2]

[H]-YC PDSWH CYDE-[NH2]

[H]-YC SKEL CYVKQE-[NH2]

[H]-YC EIEF CYKHR-[NH2]

and SEQ ID NO:S 31-34

TR-LSS YC SRSGHS CY

TR-LRQ YC RFQEEIKENTKNDKQ CY

TR-LTI YC TSYPD CI

TR-LED RYQEEC KENTK CDKQ.